AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1	 (Currently Amended) A method of processing traffic received from
2	an InfiniBand node via a first queue pair, comprising:
3	selecting a traffic entry in an InfiniBand receive queue, wherein said
4	traffic entry comprises one of:
5	a Send command comprising an encapsulated communication;
6	a Send command comprising an RDMA-a remote direct memory
7	access (RDMA) Read descriptor; and
8	an RDMA Read response comprising a response to an RDMA
9	Read request;
10	if said selected traffic entry comprises a Send command comprising an
11	RDMA Read descriptor:
12	issuing a first RDMA Read request to retrieve one or more
13	portions of a communication described by said RDMA Read descriptor;
14	in a linked list corresponding to the first queue pair, adding an
15	entry corresponding to said first RDMA Read request, said entry
16	comprising a first sequence number corresponding to a first expected
17	response to said first RDMA Read request and a last sequence number
18	corresponding to a last expected response to said first Read request, that
19	identify a range of sequence numbers associated with expected responses
20	to said first RDMA Read request and optionally comprising a sequence
21	number of the most recently received response or a link to the next entry
22	entry of in the linked list; and

23	in a retry queue, adding an entry corresponding to said first RDMA
24	Read request; and
25	if said selected traffic entry comprises an RDMA Read response to said
26	first RDMA Read request:
27	identifying a sequence number associated with said RDMA Read
28	response;
29	comparing said sequence number to said range of sequence
30	numbers;
31	storing said one or more portions of said described communication
32	to facilitate assembly of said described communication in said queue; and
33	if said sequence number matches a final sequence number in said
34	range, retiring in said retry queue said entry corresponding to said first
35	RDMA Read request.
1	2. (Original) The method of claim 1, further comprising:
2	forwarding a communication associated with said selected traffic entry,
3	for transmission on an external communication link, wherein said communication
4	is one of:
5	said encapsulated communication; and
6	said described communication, after said described communication
7	is assembled.
1	 (Original) The method of claim 1, further comprising, if said
2	selected traffic entry comprises an RDMA Read response to said first RDMA
3	Read request:
4	if said sequence number does not match said final sequence number,
5	updating said entry in said linked list to include said sequence number.

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2	maintaining a single memory structure comprising multiple linked list,
3	including said linked list;
4	wherein each linked list stores entries associated with RDMA Read
5	requests for a different InfiniBand queue pair.
1	5. (Original) The method of claim 1, further comprising:
2	maintaining a single memory structure for queuing InfiniBand traffic
3	received via multiple virtual lanes and multiple queue pairs, said single memory
4	structure comprising said queue.
1	6. (Original) The method of claim 5, wherein said queue comprises a
2	linked list of memory buffers within said single memory structure.
1	7. (Original) The method of claim 1, further comprising:
2	maintaining a head pointer configured to identify a head of said linked list;
3	and
4	maintaining a tail pointer configured to identify a tail of said linked list.
1	8. (Previously Presented) The method of claim 1, further comprising:
2	maintaining a head pointer configured to identify a head of said queue;
3	maintaining a tail pointer configured to identify a tail of said queue; and
4	maintaining a next traffic entry pointer configured to identify a next entry
5	in said queue to be processed.
1	9. (Original) The method of claim 8, wherein said tail pointer is

maintaining a single memory structure comprising multiple linked list.

selected traffic entry comprises an RDMA Read descriptor:

(Original) The method of claim 1, further comprising, if said

configured to identify where in said queue a next traffic entry is to be queued.

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3	appending space to a head of said queue;
4	wherein said described communication is assembled in said appended
5	space.
1	11. (Original) The method of claim 1, further comprising, if said
2	selected traffic entry comprises an RDMA Read response to said first RDMA
3	Read request:
4	dropping an RDMA Read response received out of order; and
5	requesting a retry of said first RDMA Read request.
1	12. (Currently Amended) A computer readable medium storing
2	instructions that, when executed by a computer, cause the computer to perform a
3	method of processing traffic received from an InfiniBand node via a first queue
4	pair, the method comprising:
5	selecting a traffic entry in an InfiniBand receive queue, wherein said
6	traffic entry comprises one of:
7	a Send command comprising an encapsulated communication;
8	a Send command comprising an RDMA Read descriptor; and
9	an RDMA Read response comprising a response to an RDMA
10	Read request;
11	if said selected traffic entry comprises a Send command comprising an
12	RDMA Read descriptor:
13	issuing a first RDMA Read request to retrieve one or more
14	portions of a communication described by said RDMA Read descriptor;
15	in a linked list corresponding to the first queue pair, adding an
16	entry corresponding to said first RDMA Read request, said entry
17	comprising a first sequence number corresponding to a first expected
18	response to said first RDMA Read request and a last sequence number
19	corresponding to a last expected response numbers that identify a range of

20	sequence numbers associated with expected responses to said first RDMA
21	Read request, and optionally comprising a sequence number of the most
22	recently received response or a link to the next entry entry of in the linked
23	list; and
24	in a retry queue, adding an entry corresponding to said first RDMA
25	Read request; and
26	if said selected traffic entry comprises an RDMA Read response to said
27	first RDMA Read request:
28	identifying a sequence number associated with said RDMA Read
29	response;
30	comparing said sequence number to said range of sequence
31	numbers;
32	storing said one or more portions of said described communication
33	to facilitate assembly of said described communication in said queue; and
34	if said sequence number matches a final sequence number in said
35	range, retiring in said retry queue said entry corresponding to said first
36	RDMA Read request.
1	13. (Currently Amended) A method of tracking responses to an
2	RDMA Read operation, the method comprising:
3	issuing an RDMA Read on a first communication connection;
4	identifying a range of sequence numbers to be associated with responses
5	to the RDMA Read;
6	adding an entry to a first linked list corresponding to the first
7	communication connection, said entry comprising:
8	a first sequence number corresponding to a first expected response
9	to the RDMA Read and a last sequence number corresponding to a last
10	expected response to the RDMA Readnumbers that identify said range of
11	sequence numbers;

2	a latest sequence number received in said range of sequence
3	numbers;
4	optionally a link to the next entry entry of in the linked list;
5	receiving a first RDMA Read response;
6	determining whether a first sequence number associated with the first
17	RDMA Read response matches a last sequence number in said range of sequence
8	numbers; and
9	if said first sequence number does not match said last sequence number,
20	updating said latest sequence number to match said first sequence number.
1	14. (Original) The method of claim 13, further comprising:
2	if said first sequence number matches said last sequence number, retiring
3	an entry in a retry queue corresponding to the RDMA Read.
1	15. (Original) The method of claim 13, wherein the first
2	communication connection is an InfiniBand queue pair.
1	16. (Original) The method of claim 15, wherein:
2	said issuing is performed by an InfiniBand transmit module; and
3	said adding, said determining and said updating are performed by an
4	InfiniBand receive module;
5	the method further comprising:
6	at the InfiniBand transmit module, retrying the RDMA Read if an RDMA
7	Read response associated with said range of sequence numbers is received out of
8	order.
1	17. (Original) The method of claim 15, wherein:
2	said issuing is performed by an InfiniBand transmit module; and
3	said adding, said determining and said updating are performed by an
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4	InfiniBand receive module;
5	the method further comprising, at the InfiniBand transmit module:
6	maintaining a retry queue for tracking RDMA Reads that have not
7	yet completed; and
8	retiring an entry in said retry queue corresponding to the RDMA
9	Read if RDMA Read responses corresponding to said range of sequence
10	numbers are received in order.
1	18. (Original) The method of claim 17, further comprising, at the
2	InfiniBand transmit module:
3	retrying the RDMA Read if RDMA Read responses corresponding to one
4	or more of said range of sequence numbers are received out of order.
1	19. (Original) The method of claim 13, wherein said identifying
2	comprises:
3	dividing an amount of data to be received in response to the RDMA Read
4	by a maximum transfer unit in effect for the first communication connection.
1	20. (Original) The method of claim 13, further comprising:
2	maintaining a single memory structure comprising multiple linked lists
3	corresponding to multiple communication connections, including said first linked
4	list corresponding to the first communication connection.
1	21. (Original) The method of claim 20, further comprising:
2	for each of the multiple communication connections, including the first
3	communication connection, maintaining pointers to the first entry and the last
4	entry in the corresponding linked list.

2	receive traffic in a communication interface, comprising:
3	a queue for queuing multiple types of receive traffic associated with
4	communications to be transmitted from the communication interface;
5	a head pointer configured to identify a head of said queue;
6	a tail pointer configured to identify a tail of said queue, wherein said
7	traffic commands are enqueued at said tail;
8	a next entry pointer configured to identify a next entry in said queue to be
9	processed; and
0	a linked list, wherein each entry in said linked list corresponds to an
1	RDMA Read request issued by the communication interface, and is configured to
2	identify a range of sequence numbers associated with expected responses to the
3	RDMA Read request, wherein the range of sequence numbers are identified by a
4	first sequence number corresponding to a first expected response to the RDMA
5	Read request and a last sequence number corresponding to a last expected
6	responses to the RDMA Read request.

- (Original) The apparatus of claim 22, wherein each entry said linked list is further configured to identify a sequence number of a most recently received response to the RDMA Read request.
- 1 24. (Original) The apparatus of claim 22, wherein the linked list is one 2 of multiple linked lists, each said linked list corresponding to a separate 3 InfiniBand queue pair.
- 1 25. (Original) The apparatus of claim 22, further comprising:
 2 a retry queue, wherein a retry entry is added to said retry queue for each
 3 RDMA Read request issued by the communication interface;
 4 wherein a first retry entry in said retry queue corresponding to a first
 5 RDMA Read request is retired when said expected responses to the first RDMA
 9

- Read request are received.

 26. (Original) The apparatus of claim 22, further comprising:
 a memory configured to store pointers to a first entry and a last entry in said linked list.

 27. (Original) The apparatus of claim 22, wherein said queue comprises an assembly area for assembling a communication associated with a first type of receive traffic.
- 1 28. (Original) The apparatus of claim 27, wherein said assembly area 2 comprises a portion of said queue delimited by said head pointer and said next 3 entry pointer.
- 1 29. (Original) The apparatus of claim 27, wherein said first type of
 2 receive traffic is an InfiniBand RDMA Read command comprising a set of
 3 RDMA read descriptors configured to identify the communication associated with
 4 said first type of receive traffic.
 - (Original) The apparatus of claim 29, wherein a second type of receive traffic is an InfiniBand Send command configured to encapsulate the communication associated with said second type of receive traffic command.
- 1 31. (Original) The apparatus of claim 27, wherein:
 2 said first type of receive traffic comprises a set of descriptors, wherein
 3 each said descriptor is configured to describe a portion of the communication
 4 associated with said first type of receive traffic; and
 5 the apparatus is configured to issue read requests to retrieve the portion
 - the apparatus is configured to issue read requests to retrieve the portions of the communication described by the set of descriptors and assemble said

2	a transmit module configured to transmit the communications associated
3	with said receive traffic;
4	wherein each communication associated with receive traffic is forwarded
5	from said queue to said transmit module after the communication is determined to
6	be complete.
1	33. (Original) The apparatus of claim 32, wherein a communication is
2	forwarded from said queue to said transmit module by passing to the transmit
3	module a set of pointers delimiting the communication within said queue.
1	34. (Original) The apparatus of claim 22, wherein said queue
2	comprises a linked list of buffers within a memory structure configured to queue
3	receive traffic for multiple communication connections.
1	35. (Currently Amended) A communication interface for tracking
2	responses to an InfiniBand RDMA Read request, comprising:
3	for each of one or more active InfiniBand queue pairs, a corresponding
4	linked list, wherein each entry in said linked list is configured to include:
5	a first sequence number corresponding to a first expected response
6	and a last sequence numbers that identify a range of sequence numbers
7	associated with expected responses to an RDMA Read request issued on
8	the corresponding queue pair by the communication interface and a last
9	sequence number corresponding to a last expected response to the RDMA
10	Read request;
11	a previous sequence number, wherein said previous sequence
12	number is a sequence number associated with a most recently received

(Original) The apparatus of claim 22, further comprising:

portions in said assembly area.

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13	response to the RDMA Read request; and
14	optionally a link to the next entry of in said linked list; and
15	for each of the linked lists, pointers to a first entry and a last entry in said
16	linked list.
1	36. (Original) The communication interface of claim 35, further
2	comprising:
3	a retry queue configured to queue retry entries corresponding to RDMA
4	Read requests issued by the communication interface;
5	wherein an retry entry in said retry queue is retired when a final response
6	to a corresponding RDMA Read request is received, said final response being
7	identified by a final sequence number in said range of sequence numbers.
1	37. (Original) The communication interface of claim 35, further
2	comprising:
3	a transmit module configured to:
4	issue a first RDMA Read request on a first queue pair; and
5	calculate said range of sequence numbers associated with said
6	expected responses to the first RDMA Read request; and
7	a receive module configured to add an entry, corresponding to the first
8	RDMA Read request, to said corresponding first linked list.
1	38. (Original) The communication interface of claim 37, wherein said
2	receive module is further configured to:
3	determine a sequence number of a response to the first RDMA Read
4	request; and
5	determine if said sequence number matches a final sequence number in
6	said range of sequence numbers associated with expected responses to the first
7	RDMA Read request.

- 1 39. (Original) The communication interface of claim 38, wherein said
- 2 receive module is further configured to:
- 3 determine if said sequence number is out of order.